

**Subject:** Design Technology

**Key Stage:** 3

**Year:** 9

Curriculum Intent.		
Term	Topic	Key knowledge and skill
1  NC link	<p><b>Focus</b></p> <p>Manufacturing project – Design, prototype, manufacturing, industry experience</p> <p>Skateboard Project</p> <p><b>Key Vocabulary</b></p> <p><b>Microcontroller:</b> A small computer on a single integrated circuit that is used to control electronic devices.</p> <p><b>Sensor:</b> A device that detects changes in the physical or chemical environment and converts them into electronic signals.</p> <p><b>Actuator:</b> A device that converts electronic signals into mechanical motion, such as a motor or solenoid.</p> <p><b>Power Supply:</b> An electronic device that provides electrical power to a circuit.</p> <p><b>Circuit Board:</b> A rigid or flexible board on which electronic components and circuits are mounted.</p> <p><b>Soldering:</b> The process of joining two or more metal components by heating them to melting point and applying a metal alloy.</p>	<p><b>Key Knowledge</b></p> <ul style="list-style-type: none"> <li>• Design principles: Design principles are the basic guidelines that should be followed when designing any product or system. These include principles such as functionality, aesthetics, durability, safety, and sustainability.</li> <li>• Materials: The choice of materials is important when designing a construction project. The properties of different materials should be considered, such as strength, weight, durability, and cost. Common materials used in construction projects include wood, metal, concrete, and plastics.</li> <li>• Tools and equipment: Different construction projects require different tools and equipment. It is important to know how to use these tools safely and effectively. Examples of tools and equipment include hammers, saws, drills, levels, and scaffolding.</li> <li>• Measurements and calculations: Accurate measurements and calculations are essential when designing and constructing a project. This includes measuring materials and spaces, calculating dimensions, and determining angles and slopes.</li> <li>• Assembly and construction: The construction process should be planned and executed carefully. This includes understanding how different parts fit together, using appropriate fasteners and adhesives, and ensuring that the project is level and stable.</li> <li>• Testing and evaluation: Once the construction project is complete, it should be tested to ensure that it meets the design requirements. This includes checking for structural integrity, stability, and</li> </ul>

	<p><b>Breadboard:</b> A device used for prototyping and testing electronic circuits, allowing components to be easily inserted and removed without soldering.</p> <p><b>Resistors:</b> A passive electronic component that limits the flow of electric current in a circuit.</p> <p><b>Capacitors:</b> A passive electronic component that stores electrical energy in an electric field.</p> <p><b>Diodes:</b> A semiconductor device that allows current to flow in one direction only.</p> <p><b>Transistors:</b> A semiconductor device that amplifies or switches electronic signals.</p> <p><b>LED (Light Emitting Diode):</b> An electronic component that emits light when current flows through it.</p> <p><b>Servo Motor:</b> A type of motor that rotates to a precise position based on electronic signals.</p> <p><b>Potentiometer:</b> A variable resistor that is used to control the flow of current in a circuit.</p> <p><b>Relay:</b> An electronic switch that is activated by an electrical signal.</p> <p><b>Inverter:</b> An electronic circuit that converts direct current (DC) to alternating current (AC).</p> <p><b>Oscillator:</b> An electronic circuit that generates a periodic waveform, such as a sine wave or square wave.</p> <p><b>Printed Circuit Board (PCB):</b> A board made of non-conductive material, on which conductive tracks are printed to connect electronic components.</p>	<p>functionality. Evaluating the success of the project can also help identify areas for improvement in future projects.</p> <p><b>Key Skills</b></p> <p><b>Project</b></p> <p>Skate board project based on a customer design brief</p>
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**Transistors:** A semiconductor device that amplifies or switches electronic signals.

**LED (Light Emitting Diode):** An electronic component that emits light when current flows through it.

**Servo Motor:** A type of motor that rotates to a precise position based on electronic signals.

**Potentiometer:** A variable resistor that is used to control the flow of current in a circuit.

**Relay:** An electronic switch that is activated by an electrical signal.

**Inverter:** An electronic circuit that converts direct current (DC) to alternating current (AC).

**Oscillator:** An electronic circuit that generates a periodic waveform, such as a sine wave or square wave.

**Printed Circuit Board (PCB):** A board made of non-conductive material, on which conductive tracks are printed to connect electronic components.

### Key Skills

Skateboard project